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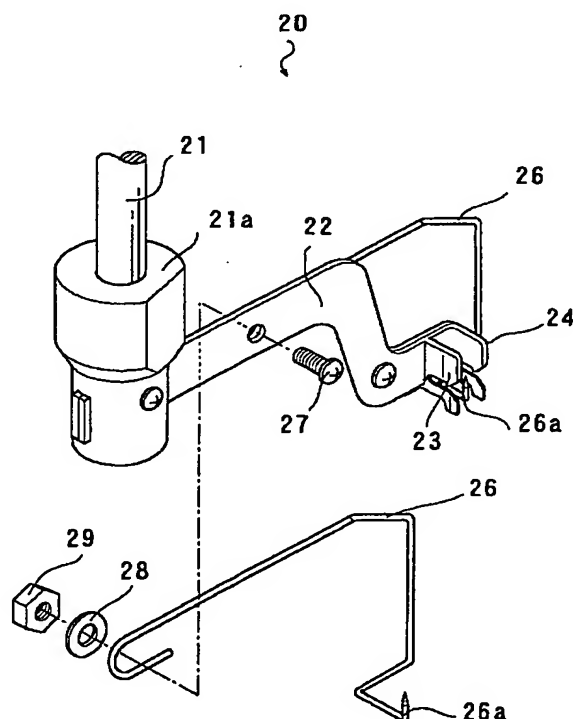
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(54) 【発明の名称】 ミシンの糸通し装置

(57) 【要約】

【課題】 ミシンの糸通し装置において、糸端が針穴から確実に引き抜かれるようにする。

【解決手段】 糸巻きからの糸Tを把持し、把持した糸がミシン針2、3の針穴2a、3aに近接して張り出されるように移動した後、糸を離して元の位置に復帰する糸案内手段10と、糸案内手段10により針穴に近接して張り出された糸を捉えて、この糸をループ状に針穴に引き込むように移動する糸通しフック25とを備えるロックミシン1の糸通し装置4において、針穴2a、3aに引き込まれた状態の糸Tが糸通しフック25から外れた場合に、その糸Tを糸通しフック25から離間した位置で捕捉する糸捕捉フック26aを有し、糸捕捉フック26aに捕捉された糸Tの端が針穴を通り抜けるような位置まで移動する弾性部材26を備える。



【特許請求の範囲】

【請求項1】糸巻きからの糸を把持し、把持した糸がミシン針の針穴に近接して張り出されるように移動した後、糸を離して元の位置に復帰する糸案内手段と、糸案内手段により針穴に近接して張り出された糸を捉えて、この糸をループ状に針穴に引き込むように移動する糸通しフックとを備えるミシンの糸通し装置において、針穴に引き込まれた状態の糸が糸通しフックから外れた場合に、その糸を糸通しフックから離間した位置で捕捉する糸捕捉部を有し、糸捕捉部に捕捉された糸の端が針穴を通り抜けるような位置まで移動する捕捉移動手段を備えることを特徴とするミシンの糸通し装置。

【請求項2】捕捉移動手段は、糸通しフックをミシン針に対して接近および離間するように駆動する糸通しフック駆動手段に対して、糸捕捉部が糸通しフックの下方に位置するように、取り付けられていることを特徴とする請求項1に記載のミシンの糸通し装置。

【請求項3】捕捉移動手段は、糸捕捉部が他の部材に接すると後退するように、少なくとも一部が弾性部材からなることを特徴とする請求項1または2に記載のミシンの糸通し装置。

【請求項4】所定の位置に糸切断部材が設けられていることを特徴とする請求項1～3のいずれかに記載のミシンの糸通し装置。

【請求項5】糸切断部材は、ミシンアーム下部に固定された空環カッターであることを特徴とする請求項4に記載のミシンの糸通し装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、ミシン針の針穴へ糸を通すミシンの糸通し装置に関する。

【0002】

【従来の技術】従来、ミシン針の針穴に上糸を通す糸通し装置が知られており、たとえば特許公報第2917320号に記載されているものが挙げられる。この公報に記載された糸通し装置は、ミシン針の針穴を通り抜けることができる微細なフックにより、定められた長さに切断された上糸を引き上げること、糸通しを行うものである。

【0003】

【発明が解決しようとする課題】しかしながら、上記公報の糸通し装置では、公報の第4頁右欄第37行～第40行に記載されているように、「その上昇過程において、上糸Tの目孔99における摩擦力や上糸Tの自重等により、フック37が上糸Tを保持しきれなくなり、鈎部35から外れる」ため、糸端を完全に引き抜いていない状態で糸がフリーになってしまい、糸が外れて糸通しをやり直したり、あるいはピンセットのような道具を用いて糸端を針穴から出すといった作業を要したりといったことから、面倒であった。

【0004】本発明の課題は、ミシン針の針穴に上糸を通すミシンの糸通し装置において、糸端が針穴から確実に引き抜かれ糸通し作業をより簡単にすることにある。

【0005】

【課題を解決するための手段】以上の課題を解決するため、請求項1に記載の発明は、たとえば図1、図2に示すように、糸巻きからの糸(T)を把持し、把持した糸がミシン針(2, 3)の針穴(2a, 3a)に近接して張り出されるように移動した後、糸を離して元の位置に復帰する糸案内手段(10)と、糸案内手段により針穴に近接して張り出された糸を捉えて、この糸をループ状に針穴に引き込むように移動する糸通しフック(25)とを備えるミシン(ロックミシン1)の糸通し装置(4)において、針穴に引き込まれた状態の糸が糸通しフックから外れた場合に、その糸を糸通しフックから離間した位置で捕捉する糸捕捉部(糸捕捉フック26a、フック31)を有し、糸捕捉部に捕捉された糸の端が針穴を通り抜けるような位置まで移動する捕捉移動手段(弾性部材26、捕捉移動手段30)を備えることを特徴とする。

【0006】請求項1に記載の発明によれば、糸案内手段によって糸巻きからの糸がミシン針の針穴近くで張り出され、その糸は糸通しフックにより針穴にループ状に引き込まれる。さらに、その糸が糸通しフックから外れた場合には、捕捉移動手段の糸捕捉部によって捕捉され、捕捉移動手段の移動により糸端が針穴を通り抜けることから、従来の糸通し装置のように途中で糸端がフリーになってしまうことはなく、糸端を確実に針穴から引き抜くことができる。

【0007】請求項2に記載の発明は、請求項1に記載のミシンの糸通し装置において、捕捉移動手段は、糸通しフックをミシン針に対して接近および離間するように駆動する糸通しフック駆動手段(20)に対して、糸捕捉部が糸通しフックの下方に位置するように、取り付けられていることを特徴とする。

【0008】請求項2に記載の発明によれば、捕捉移動手段は、糸捕捉部が糸通しフックの下方に位置するように、糸通しフック駆動手段に取り付けられていることから、糸通しフックとともに移動しながら、糸通しフックが捉えた糸が糸通しから外れた場合、確実に捕捉することができる。ここで、糸通しフック駆動手段の具体的構成は特に限定されないが、たとえば、回転軸を有し該軸を介して糸通しフックを駆動する構成であってもよいし、アクチュエータを利用し糸通しフックを駆動する構成であってもよい。

【0009】請求項3に記載の発明は、請求項1または2に記載のミシンの糸通し装置において、捕捉移動手段は、糸捕捉部が他の部材に接すると後退するように、少なくとも一部が弾性部材(弾性部材26、バネ34)からなることを特徴とする。

【0010】糸捕捉部が糸通しフックの近くに設けられている場合、特に請求項2のように糸通しフック駆動手段に取り付けられていると、糸通しフックにより糸を針穴に引き込む作業の際に、糸捕捉部がミシン針などの他の部材に接する可能性がある。しかし、請求項3の捕捉移動手段であれば、糸捕捉部が他の部材に接すると後退するように少なくとも一部が弾性部材からなることから、ミシン針などに当接した場合糸捕捉部が逃げるように後退するので、糸を引き込む作業に悪影響を及ぼすことはない。ここで、「少なくとも一部が弾性部材からなる」とは、たとえば捕捉移動手段全体が可撓性を有する金属や樹脂から形成されていてもよいし、糸捕捉部とは別にバネやゴムなどの弾性部材が設けられていてもよい。

【0011】請求項4に記載の発明は、請求項1～3のいずれかに記載のミシンの糸通し装置において、所定の位置に糸切断部材（カッター12）が設けられていることを特徴とする。

【0012】請求項4に記載の発明によれば、所定の位置に設けられている糸切断部材によって、糸巻きからの糸を決まった位置で切断できるので、常に糸端までの長さが一定になる。よって、糸を捕捉後の捕捉移動手段の移動先の位置と糸切断部材の位置を調節することで、糸端が必ず針穴を通り抜けるように容易に構成することができる。

【0013】請求項4に記載のミシンの糸通し装置において、請求項5に記載の発明のように、糸切断部材は、ミシンアーム下部に固定された空環カッターであってもよい。請求項5に記載の発明のように、従来も設けられていた空環カッターを糸通しのための糸切断部材としても兼用すれば、部品点数を増やすことなく糸切断部材を設けることができる。

【0014】

【発明の実施の形態】以下、図面に基づいて本発明の実施の形態を詳細に説明する。図1の糸通し装置4は、オーバーロックミシン1のミシンアーム1aに設けられ、2本のミシン針2、3の針穴2a、3aに上糸を通すための装置である。糸通し装置4は、主に、操作レバー11、カッター12、糸案内手段10、針棒糸案内14、および図2に示す糸通しフック駆動手段20からなる。糸通しフック駆動手段20は、通常は糸案内手段10の後方のミシンアーム1a内にあり外側からは見えない。

【0015】操作レバー11は、上糸に糸Tを通す際に操作するレバーである。カッター12は、刃12aが取り付けられ、縁かがり縫等の環縫い縫製時に空環を切断する空環カッターである。またカッター12は、糸通し時に上糸を切断する糸切断部材でもあり、図1に示すミシンアーム1aの側面下部の所定の位置に設けられている。この「所定の位置」は、後述する糸通し動作の際に糸捕捉フック26aによって引き上げられる糸Tの糸端

が、確実に針穴2a、3aを通り抜けられるような長さになるように配慮して、決められている。なお、従来の空環カッターは、図1のA位置に設けられていたが、糸通し時を考慮し本発明においてはB位置に設けられている。針棒糸案内14は、針固定部16の上部にネジ止めされた螺旋状のワイヤーからなる。

【0016】糸案内手段10は、プリテンション部13とワイパー15からなる。プリテンション部13は、糸通し時に、取付基板13aとプリテンション皿13bとの間で糸を挟むものである。取付基板13aの右側部が延出するように形成され、その端部に下端部が二股に分かれたワイパー15が固定されている。ワイパー15の二股部分は、糸を案内するための案内溝15aとなっている。

【0017】図2に示す糸通しフック駆動手段20は、糸通し軸21、該糸通し軸21に固着されたホルダー21a、フック駆動板22、フックカバー23、24等からなる。図3に示すように、フックカバー23、24の間には、先端が下向きの鉤型に形成された糸通しフック25が突出するように設けられている。この糸通しフック25は、針穴2a、3aを通り抜ける大きさである。糸通しフック駆動手段20はこの糸通しフック25をミシン針2、3に接近および離間するように駆動するものである。

【0018】また、フック駆動板22の背面側には、細長い部材からなり、全体として撓み可能に弾性を有する弾性部材26が取り付けられている。弾性部材26は、ネジ27、座金28、およびナット29によりフック駆動板22に固定されている。また、弾性部材26の先端部は、フックカバー23、24の間に臨むように、上方に向かって針状に形成され、糸通しフック25からはずれた糸を捕捉する糸捕捉フック（糸捕捉部）26aとなっている。すなわち、弾性部材26が本発明の捕捉移動手段となる。また、図4(a)に示すように、糸捕捉フック26aは、糸通しフック25の真下であって、かつ、その先端が糸通しフック25の先端近くでわずかに前に位置するように設けられている。

【0019】糸案内手段10およびフック駆動手段20は、いずれも操作レバー11の動作にともなって所定の動作をするように構成されている。すなわち、操作レバー11が下方に押し下げられることに連動して、プリテンション部13とワイパー15は右斜め下に向かって、ワイパー15がミシン針2、3の前方を通り過ぎるまで移動する。ほぼ同時に糸通し軸21が下降しながらフック駆動板22の先端が前方に向かう方向に回転し、糸通しフック25がミシン針2またはミシン針3の針穴を通る。次に、操作レバー11を離すと、操作レバー11が上昇しながら元の位置に戻るとともに、プリテンション部13とワイパー15は左斜め上方に移動し、糸通し軸21は逆方向に回転しながら上昇していき、元の状態に

なる。プリテンション部13の取付基板13aとプリテンション皿13bとの間は通常は閉じているが、上昇する時、糸通しフック25が糸を確実に捕捉した後に開放するようになっている。なお、このような糸通し装置10の動作機構は、既に周知の技術であることから、詳細は省略する。

【0020】糸通し装置10には、図示しないミシン針切換レバーが設けられ、このレバーを操作することにより、ミシン針2, 3のいずれに糸通しするかを選択できるようになっている。

【0021】上記構成の糸通し装置10における糸通し作業時の動作を説明する。糸通し装置10では、上糸をたとえばミシン針2に通す場合、まず、ミシンアーム1a上部の図示しない糸巻きから誘導した糸Tを針棒案内14に通し、次いで、ワイパー15の案内溝15aに掛け、プリテンション部13の取付基板13aとプリテンション皿13bとの間に通し、操作レバー11の外側を回して、カッター12に糸を掛けるとその位置で糸が切れる。このとき、糸通しフック25と糸捕捉フック26aは図4(a)の状態である。

【0022】この状態で、操作レバー11を下方(図1の矢印C方向)に引くと、前述のように、プリテンション部13が図1における右斜め下に向かって移動する。糸Tもワイパー15に誘導されるように共に移動する。ワイパー15がミシン針2, 3の前を通り過ぎたところで停止すると、糸Tは、プリテンション部13の取付基板13aとプリテンション皿13bとの間が閉じられることで十分な力で挟まれ所定の張力をもってミシン針2の針穴の直前に張り出されたような状態になる。

【0023】上記のプリテンション部13とワイパー15の動作とほぼ同時に、糸通し軸21は下降しながら回転し、糸通しフック25がミシン針2の針穴2aに近づいていく。糸Tが針穴2a前に張り出された状態になったときに、糸通し軸21のさらなる回転により、糸通しフック25が針穴2aを通り抜け、その鉤型の先端により糸Tを引っ掛けループ状に針穴2aに引き込んでいく。このとき、糸捕捉フック26aの先端はミシン針2の下端部に当接するが、可撓性を有することから、図4(b)に示すように後方に撓みミシン針2に影響を与えるようなことはない。

【0024】この状態で操作レバー11の手を離すと、操作レバー11は戻るようにより上昇していく。糸通し軸21は逆方向に回転しながら上昇していき、この動きにともなって、図4(c)に示すように、糸通しフック25は糸Tを引き上げていく。このとき、糸捕捉フック26aもミシン針2から離れていくので元の形状に戻る。また、ほぼ同時に、取付基板13aとプリテンション皿13b間は開放され、プリテンション部13とワイパー15は、糸Tを離して左斜め上に移動し元の位置に戻る。糸通しフック25が上昇していく過程で、糸Tは自重等

により糸通しフック25から外れてしまうが、糸通しフック25の斜め下に位置する糸捕捉フック26aに掛かり捕捉される。さらに糸通し軸21が回転しながら上昇し元の待機位置に戻り、糸捕捉フック26aも元の位置に戻ると、所定の長さに切断されている糸Tの糸端は針穴2aを通り抜ける(図4(d))。なお、糸捕捉フック26aは糸Tを引っ掛けているだけで固定してはいないので、糸捕捉フック26aから外す作業等なしに縫製を開始できる。

【0025】以上の糸通し装置10によれば、糸Tを針穴から引き抜くとき糸通しフック25から外れた糸は、糸捕捉フック26aにより捕捉され、糸捕捉フック26aが元の位置に戻る動作に伴って糸端が針穴から通り抜けることから、糸端が引き抜き途中でフリーになってしまうようなことはなく、確実に針穴から引き抜くことができる。したがって、糸通し作業が簡単に確実にできる。また、糸捕捉フック26aを有する弾性部材26は、糸通しフック駆動手段20を構成するフック駆動板22に取り付けられ、しかも、糸捕捉フック26aは糸通しフック25の下であって、かつ、前方に位置することから、糸通しフック25とともに移動しながら糸通しフック25から外れた糸Tを確実に捕捉できる。さらに、糸捕捉フック26aは、糸通しフック25の真下であって、かつ、その先端が糸通しフック25の先端近くでわずかに前に位置するように設けられていることから、糸通しフック25が糸を引き抜くとき、ミシン針2に当接してしまうが、弾性部材26の一部であることから、糸捕捉フック26aは撓みながら後退しミシン針2に影響を与えるようなことはない。

【0026】また、ミシンアーム1a側部下面の所定の位置に設けられたカッター12によって糸巻きから引き出された糸Tを決まった位置で切断することができるので、糸捕捉フック26aが待機位置に戻れば必ず糸端が針穴から引き抜かれる。さらに、カッター12は、従来の空環カッターも兼ねていることから、部品点数が増えることはない。

【0027】なお、本発明は上記実施の形態に限定されるものではなく、適宜変更可能であることは勿論である。たとえば、捕捉移動手段は、図5に示すような構成でもよい。図5には、捕捉移動手段30を示す。捕捉移動手段30は、フック31、バネ34、抜け止めネジ32、支持部材33からなる。糸捕捉部であるフック31は、コの字状に形成されている。支持部材33は、フック31を支持するもので、たとえば、前記フック駆動板22に取り付けられることによって固定され、フック31の頭部31aがはめ込まれる嵌合穴33aを有する。

【0028】図5の移動捕捉手段30を上記実施の形態に適用した場合、前記糸捕捉フック26a同様に、フック31は糸通しフック25の下であって、かつ前に来るように位置させる。フック31は、ミシン針にその先端

が当接したならば、バネ34の弾性力に抗して、頭部31aが嵌合穴33aに沿うように後退し、ミシン針から離れればバネ34の付勢力により前方に戻り、糸通しフックから外れた糸を捕捉できる。

【0029】さらに、上記実施の形態では、操作レバーの動作に伴って回転する糸通し軸により糸通しフックを駆動したが、他の機構でもよく、たとえばアクチュエータを含むような構成としてもよい。また、本実施例においてはオーバーロックミシンにより説明したが、本発明の糸通し装置は、他の本縫いミシン、模様縫いミシン等に適用してもよい。

【0030】

【発明の効果】請求項1に記載の発明によれば、糸案内手段によって糸巻きからの糸がミシン針の針穴近くで張り出され、その糸は糸通しフックにより針穴にループ状に引き込まれる。さらに、その糸が糸通しフックから外れた場合には、捕捉移動手段の糸捕捉部によって捕捉され、捕捉移動手段の移動により糸端が針穴を通り抜けることから、従来の糸通し装置のように途中で糸端がフリーになってしまうことがなく、糸端を確実に針穴から引き抜くことができる。したがって、糸通し作業が簡単にかつ確実にできる。

【0031】請求項2に記載の発明によれば、捕捉移動手段は、糸捕捉部が糸通しフックの下方に位置するように、糸通しフック駆動手段に取り付けられていることから、糸通しフックとともに移動しながら、糸通しフックが捉えた糸が糸通しから外れた場合、確実に捕捉することができる。

【0032】糸捕捉部が糸通しフックの近くに設けられている場合、特に請求項2のように糸通しフック駆動手段に取り付けられていると、糸通しフックにより糸を針穴に引き込む作業の際に、糸捕捉部がミシン針などの他の部材に接する可能性がある。しかし、請求項3の捕捉移動手段であれば、糸捕捉部が他の部材に接すると後退するように少なくとも一部が弾性部材からなることから、ミシン針などに当接した場合糸捕捉部が逃げるように後退するので、糸を引き込む作業に悪影響を及ぼすことはない。

【0033】請求項4に記載の発明によれば、所定の位置に設けられている糸切断部材によって、糸巻きからの

糸を決まった位置で切断できるので、常に糸端までの長さが一定になる。よって、糸を捕捉後の捕捉移動手段の移動先の位置と糸切断部材の位置を調節することで、糸端が必ず針穴を通り抜けるように容易に構成することができる。また、請求項5に記載の発明のように、従来も設けられていた空環カッターを糸切断部材としても兼用すれば、部品点数を増やすことなく糸切断部材を設けることができる。

【図面の簡単な説明】

【図1】本発明のミシンの糸通し装置の一例を示す斜視図である。

【図2】図1の糸通し装置に設けられる糸通しフック駆動手段を示す斜視図である。

【図3】図2の糸通しフック部分の拡大図である。

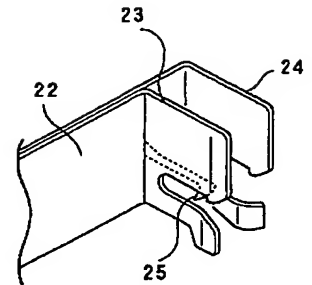
【図4】糸通しフック部分のみを一方のフックカバー側から見た側面図であり、糸通し作業を説明するための図である。

【図5】捕捉移動手段の他の例の概略を示す図である。

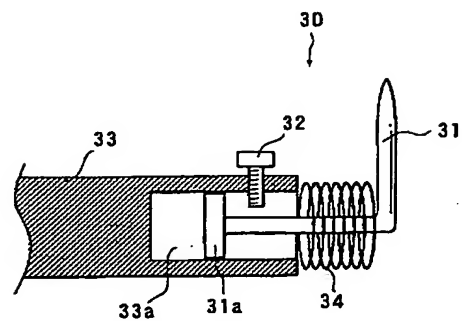
【符号の説明】

- 1 ロックミシン（ミシン）
- 1 a ミシンアーム
- 2, 3 ミシン針
- 4 糸通し装置
- 10 糸案内手段
- 11 操作レバー
- 12 カッター（糸切断部材）
- 13 プリテンション部
- 14 針棒糸案内
- 15 ワイパー
- 20 糸通しフック駆動手段
- 21 糸通し軸
- 22 フック駆動板
- 23、24 フックカバー
- 25 糸通しフック
- 26 弾性部材（捕捉移動手段）
- 26 a 糸捕捉フック（糸捕捉部）
- 30 捕捉移動手段
- 31 フック（糸捕捉部）
- 34 バネ（弾性部材）

【図3】



【図4】



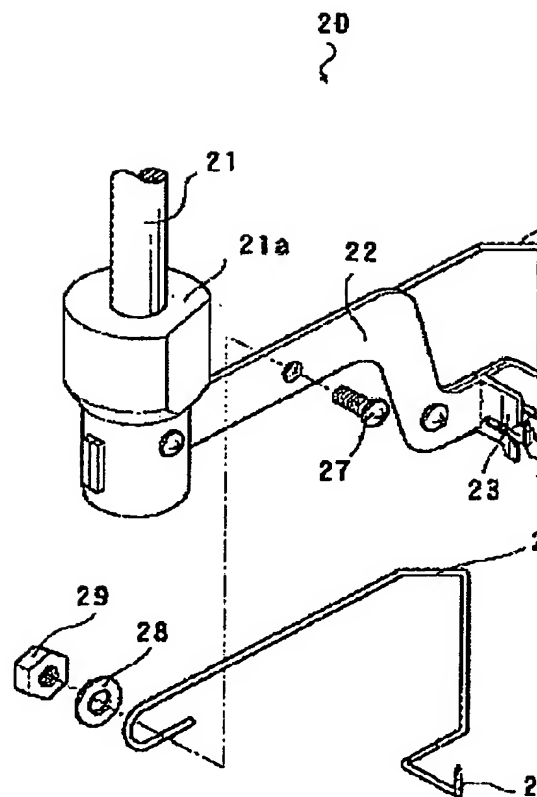
THREADING DEVICE FOR SEWING MACHINE

Patent number: JP2001218992
 Publication date: 2001-08-14
 Inventor: SADASUE KAZUYA
 Applicant: JUKI CORP
 Classification:
 - International: D05B87/02
 - european:
 Application number: JP20000031896 20000209
 Priority number(s):

Abstract of JP2001218992

PROBLEM TO BE SOLVED: To allow a thread end to be securely drawn out of a needle hole in a threading device for a sewing machine.

SOLUTION: The threading device 4 of a lock machine 1 provided with a thread guide means 10 holding a thread T from a bobbin and moving so that the held thread accesses closely needle holes 2a, 3a of sewing machine needles 2, 3 and juts out, and then, releasing the thread and returning to its initial position and a threading hook 25 catching the thread accessing needle holes and jutting out by the thread guide means 10 and moving so that the thread is drawn in the needle hole so as to form a loop, is also provided with a hook 26a catching the thread T when the thread T drawn in the needle holes 2a, 3a comes off the threading hook 25, at a position separated from the threading hook 25, and further, an elastic member 26 moving to such a position that the end of the thread T caught by the thread-catching hook 26a passes through the needle hole.



PATENT ABSTRACTS OF JAPAN

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(71)Applicant : JUKI CORP

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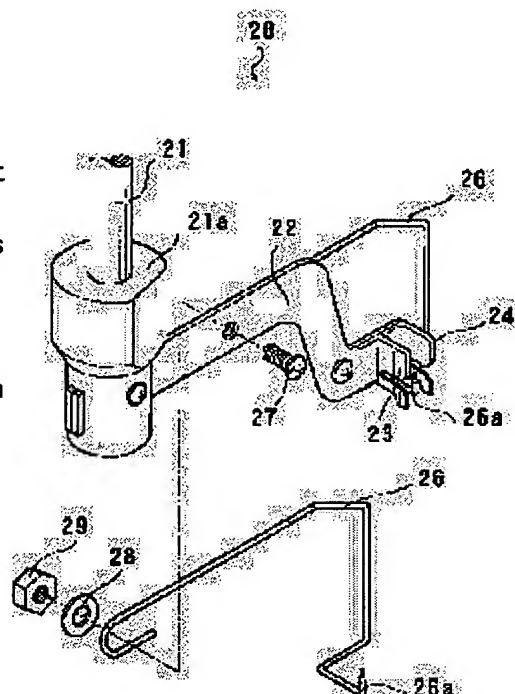
(72)Inventor : SADASUE KAZUYA

(54) THREADING DEVICE FOR SEWING MACHINE

(57)Abstract:

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LEGAL STATUS

[Date of request for examination]

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[Date of final disposal for application]

[Patent number]

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[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] A tension-thread-guard means to grasp thread from a spool, and to detach thread and to return to the original location after moving so that grasped thread may approach a pinholing of a needle and may be juttet out A threader hook which moves so that thread juttet out by approaching a pinholing with a tension-thread-guard means may be caught and this thread may be drawn in a pinholing in the shape of a loop It is characterized by to have a prehension migration means is threader equipment of the sewing machine equipped with the above, and move to the location where an edge of thread which has the thread prehension section which catches the thread in a location estranged from a threader hook when thread in the condition were drawn in a pinholing separates from a threader hook, and was caught by the thread prehension section passes through a pinholing.

[Claim 2] A prehension migration means is threader equipment of a sewing machine according to claim 1 characterized by being attached so that the thread prehension section may be located under the threader hook to a threader hook driving means driven so that a threader hook may be approached and estranged to a needle.

[Claim 3] A prehension migration means is threader equipment of a sewing machine according to claim 1 or 2 characterized by at least a part consisting of an elastic member so that it may retreat, if the thread prehension section touches other members.

[Claim 4] Threader equipment of a sewing machine according to claim 1 to 3 characterized by preparing a thread cutting member in a position.

[Claim 5] A thread cutting member is threader equipment of a sewing machine according to claim 4 characterized by being the **** cutter fixed to the sewing-machine arm lower part.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the threader equipment of the sewing machine which lets thread pass to the pinholing of a needle.

[0002]

[Description of the Prior Art] Conventionally, what the threader equipment which lets a needle thread pass to the pinholing of a needle is known, for example, is indicated by the patent official report No. 2917320 is mentioned. By the detailed hook which can pass through the pinholing of a needle, the threader equipment indicated by this official report is pulling up the needle thread cut by the defined length, and performs a threader.

[0003]

[Problem(s) to be Solved by the Invention] However, with the threader equipment of the above-mentioned official report, as indicated in the 4th page right column of - of 37th line the 40th line of an official report Since "it becomes impossible for hook 37 to be unable to hold a needle thread T and it separates from a hook 35 in the rise process with the self-weight of the frictional force in **** 99 of a needle thread T, or a needle thread T etc.", It was troublesome from from [of being as requiring the activity of thread becoming free in the condition of having not drawn out the margin of string completely, and thread separating, and taking out the margin of string from a pinholing using a tool like a pincette **** / and]. [redoing a threader]

[0004] The technical problem of this invention is in the threader equipment of the sewing machine which lets a needle thread pass to the pinholing of a needle to draw out the margin of string certainly from a pinholing, and simplify a threader activity more.

[0005]

[Means for Solving the Problem] In order to solve the above technical problem, invention according to claim 1 For example, a tension-thread-guard means to detach thread and to return to the original location after moving so that thread which grasped thread (T) from a spool and was grasped may approach a pinholing (2a, 3a) of a needle (2 3) and may be jugged out as shown in drawing 1 and drawing 2 (10), In threader equipment (4) of a sewing machine (lock sewing machine 1) equipped with a threader hook (25) which moves so that thread jugged out by approaching a pinholing with a tension-thread-guard means may be caught and this thread may be drawn in a pinholing in the shape of a loop the thread prehension section (thread prehension hook 26a --) which catches the thread in a location estranged from a threader hook when thread in the condition of having been drawn in a pinholing separates from a threader hook It has hook 31 and is characterized by having a prehension migration means (an elastic member 26, prehension migration means 30) for an edge of thread caught by the thread prehension section to pass through a pinholing and to move to a location.

[0006] According to invention according to claim 1, thread from a spool is jugged out near the pinholing of a needle by tension-thread-guard means, and the thread is drawn in a pinholing in the shape of a loop by threader hook. Furthermore, when the thread separates from a threader hook, it is caught by the thread prehension section of a prehension migration means, and the margin of string does not become free on the way like threader equipment of the former [pass / by migration of a prehension migration means / through a pinholing / the margin of string], and the margin of string can be certainly drawn out from a pinholing.

[0007] It is characterized by setting invention according to claim 2 to threader equipment of a sewing machine according to claim 1, and attaching a prehension migration means so that the thread prehension section may be located under the threader hook to a threader hook driving means (20) driven so that a threader hook may be approached and estranged to a needle.

[0008] According to invention according to claim 2, a prehension migration means can be certainly caught, when thread

which a threader hook caught separates from a threader, moving with a threader hook since it is attached in a threader hook driving means so that the thread prehension section may be located under the threader hook. Here, although especially a concrete configuration of a threader hook driving means is not limited, for example, you may be the configuration of having the axis of rotation and driving a threader hook through this shaft, and may be the configuration of using an actuator and driving a threader hook.

[0009] Invention according to claim 3 is set to threader equipment of a sewing machine according to claim 1 or 2, and at least a part is characterized by consisting of an elastic member (an elastic member 26, spring 34) so that a prehension migration means may retreat, if the thread prehension section touches other members.

[0010] If it is attached in a threader hook driving means like especially claim 2 when the thread prehension section is prepared near the threader hook, the thread prehension section may touch other members, such as a needle, in the case of an activity which draws thread in a pinholing by threader hook. However, since at least a part consists of an elastic member so that it may retreat, if the thread prehension section touches other members and it will retreat so that the field doubling prehension section which contacted a needle etc. may escape if it is the prehension migration means of claim 3, it does not have a bad influence on an activity which draws thread. Here, it may be formed from a metal and resin with which the prehension migration means whole [for example,] has flexibility, saying "at least a part consists of an elastic member", and elastic members, such as a spring and rubber, may be prepared apart from the thread prehension section.

[0011] Invention according to claim 4 is characterized by preparing a thread cutting member (cutter 12) in a position in threader equipment of a sewing machine according to claim 1 to 3.

[0012] Since a thread cutting member prepared in a position can cut thread from a spool in a regular location according to invention according to claim 4, length to the margin of string always becomes fixed. Therefore, it can constitute from adjusting a location of a migration place of a prehension migration means after catching thread, and a location of a thread cutting member easily so that the margin of string may surely pass through a pinholing.

[0013] In threader equipment of a sewing machine according to claim 4, a thread cutting member may be the **** cutter fixed to the sewing-machine arm lower part like invention according to claim 5. If a **** cutter prepared also conventionally is made to serve a double purpose also as a thread cutting member for a threader like invention according to claim 5, a thread cutting member can be prepared without increasing components mark.

[0014]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to details based on a drawing. In order that the threader equipment 4 of drawing 1 may be formed in sewing-machine arm 1a of the exaggerated lock sewing machine 1 and may let a needle thread pass to the pinholings 2a and 3a of two needles 2 and 3, it is equipment. Threader equipment 4 mainly consists of a control lever 11, a cutter 12, the tension-thread-guard means 10, a needle bar thread guide 14, and a threader hook driving means 20 shown in drawing 2. The threader hook driving means 20 is usually in sewing-machine arm 1a behind the tension-thread-guard means 10, and is not in sight from an outside.

[0015] A control lever 11 is a lever operated in case it lets Thread T pass to a needle thread. A cutter 12 is a **** cutter which edge 12a is attached and cuts **** at the time of ring sewing sewing, such as *****. Moreover, the cutter 12 is formed in the position of the side lower part of sewing-machine arm 1a which is also a thread cutting member and is shown in drawing 1 which cuts a needle thread at the time of a threader. This "position" is considered so that the margin of string of the thread T which can be pulled up by thread prehension hook 26a in the case of the threader actuation mentioned later may become the length which passes through Pinholings 2a and 3a certainly, and it is decided. In addition, although the conventional **** cutter was prepared in A location of drawing 1, it is prepared in B location in this invention in consideration of the time of a threader. A needle bar thread guide 14 consists of a spiral wire by which the screw stop was carried out to the upper part of the needle fixed part 16.

[0016] The tension-thread-guard means 10 consists of the PURITENSHON section 13 and a wiper 15. The PURITENSHON section 13 is nippers about thread between attachment substrate 13a and PURITENSHON pan 13b at the time of a threader. It is formed so that the right flank of attachment substrate 13a may extend, and the wiper 15 with which the lower limit section was divided into the edge at two forks is being fixed. The amount of two crotches of a wiper 15 are guide rail 15a for guiding thread.

[0017] The threader hook driving means 20 shown in drawing 2 consists of electrode-holder 21a which fixed on the threader shaft 21 and this threader shaft 21, the hook drive board 22, hook covering 23, and 24 grades. As shown in drawing 3, among the hook coverings 23 and 24, it is prepared so that the threader hook 25 by which the tip was formed in the downward ** type may project. This threader hook 25 is the magnitude which passes and can do Pinholings 2a and 3a. The threader hook driving means 20 is driven so that this threader hook 25 may be approached

and estranged to needles 2 and 3.

[0018] Moreover, it consists of a long and slender member, and the elastic member 26 which has elasticity possible [bending] as a whole is attached in the back side of the hook drive board 22. The elastic member 26 is being fixed to the hook drive board 22 with the screw 27, the washer 28, and the nut 29. Moreover, the point of an elastic member 26 is formed needlelike toward the upper part, and has become thread prehension hook (thread prehension section) 26a which catches the thread shifted from the threader hook 25 so that it may face among the hook coverings 23 and 24. That is, an elastic member 26 serves as a prehension migration means of this invention. Moreover, as shown in drawing 4 (a), thread prehension hook 26a is just under the threader hook 25, and it is prepared so that the tip may be slightly located in front near the tip of the threader hook 25.

[0019] The tension-thread-guard means 10 and the hook driving means 20 are constituted so that each may carry out predetermined actuation with actuation of a control lever 11. That is, it is interlocked with that a control lever 11 is depressed caudad, and the PURITENSHON section 13 and a wiper 15 move until a wiper 15 passes the front of needles 2 and 3 toward the bottom in a slight right slanting. While the threader shaft 21 descends to coincidence mostly, it rotates in the direction in which the tip of the hook drive board 22 goes ahead, and the threader hook 25 passes along the pinholing of a needle 2 or a needle 3. Next, if a control lever 11 is detached, while a control lever 11 goes up and returning to the original location, the PURITENSHON section 13 and a wiper 15 move to the left slanting upper part, and the threader shaft 21 goes up rotating to hard flow, and they will be in the original condition. Although usually closed between attachment substrate 13a of the PURITENSHON section 13, and PURITENSHON pan 13b, when going up, it opens, after the threader hook 25 catches thread certainly. In addition, since such a device of threader equipment 10 of operation is well-known technology already, details are omitted.

[0020] It can choose now as threader equipment 10 to any of needles 2 and 3 a threader is carried out by preparing the needle change over lever which is not illustrated and operating this lever.

[0021] The actuation at the time of the threader activity in the threader equipment 10 of the above-mentioned configuration is explained. the thread T first guided with threader equipment 10 from the spool which does not have the sewing-machine arm 1a upper part a drawing example when letting a needle thread pass to a needle 2 -- a needle bar thread guide 14 -- through -- if it hangs, the outside of through and a control lever 11 is turned subsequently to guide rail 15a of a wiper 15 between attachment substrate 13a of the PURITENSHON section 13, and PURITENSHON pan 13b and thread is hung on a cutter 12, thread will snap in the location. At this time, the threader hook 25 and thread prehension hook 26a are in the condition of drawing 4 (a).

[0022] In this condition, if a control lever 11 is lengthened below (the direction of arrow head C of drawing 1), the PURITENSHON section 13 will move toward the bottom as mentioned above in the slight right slanting in drawing 1 . It moves so that Thread T may be guided [both] to a wiper 15. If it stops in the place where the wiper 15 passed the needles 2 and 3 front, by between attachment substrate 13a of the PURITENSHON section 13 and PURITENSHON pan 13b being closed, it is inserted by sufficient force and Thread T will ***** with predetermined tension just before the pinholing of a needle 2.

[0023] It rotates, while the threader shaft 21 descends to coincidence mostly with the above-mentioned PURITENSHON section 13 and actuation of a wiper 15, and the threader hook 25 approaches pinholing 2a of a needle 2. When Thread T changes into the condition of having *****ed before pinholing 2a, by further rotation of the threader shaft 21, the threader hook 25 passes through pinholing 2a, and draws Thread T in pinholing 2a in the shape of a jig loop by the ** type tip. It seems that it bends back and a needle 2 is not affected as shown in drawing 4 (b) since it has flexibility although the tip of thread prehension hook 26a contacts the lower limit section of a needle 2 at this time.

[0024] If the hand of a control lever 11 is lifted in this condition, the control lever 11 goes up so that it may return. The threader shaft 21 goes up rotating to hard flow, and in connection with this motion, as shown in drawing 4 (c), the threader hook 25 pulls up Thread T. At this time, since thread prehension hook 26a also separates from the needle 2, it returns to the original configuration. Moreover, mostly, it is wide opened by coincidence between attachment substrate 13a and PURITENSHON pan 13b, and the PURITENSHON section 13 and a wiper 15 detach Thread T, move to the diagonal left, and return to the original location. Although Thread T will separate from the threader hook 25 with a self-weight etc. in the process in which the threader hook 25 goes up, thread prehension hook 26a located under the slant of the threader hook 25 is started, and it is caught. If it goes up while the threader shaft 21 furthermore rotates, and return and thread prehension hook 26a also return to the original position in readiness in the original location, the margin of string of Thread T currently cut by predetermined length will pass through pinholing 2a (drawing 4 (d)). In addition, since thread prehension hook 26a is not fixed only by having hooked Thread T, sewing can be started without the activity removed from thread prehension hook 26a.

[0025] According to the threader equipment 10 of a more than, the thread which separated from the threader hook 25

when drawing out Thread T from a pinholing is caught by thread prehension hook 26a, and the margin of string is in the middle of drawing, and since the margin of string passes from a pinholing with the actuation in which thread prehension hook 26a returns to the original location, it can be certainly drawn out from a pinholing so that it may not become free. Therefore, a threader activity is easy and can be done certainly. Moreover, it is attached in the hook drive board 22 which constitutes the threader hook driving means 20, and thread prehension hook 26a is under the threader hook 25, and since the elastic member 26 which has thread prehension hook 26a is located ahead, it can catch certainly the thread T which separated from the threader hook 25, moving with the threader hook 25. Thread prehension hook 26a retreats bending, and seems furthermore, for thread prehension hook 26a to be just under the threader hook 25, and to contact a needle 2, when the threader hook 25 draws out thread since the tip is prepared so that it may be slightly located in front near the tip of the threader hook 25, but not to affect a needle 2, since it is a part of elastic member 26.

[0026] Moreover, since the thread T pulled out from the spool by the cutter 12 prepared in the position under a sewing-machine arm 1a flank can be cut in the regular location, if thread prehension hook 26a returns to a position in readiness, the margin of string will surely be drawn out from a pinholing. Furthermore, since the cutter 12 serves also as the conventional **** cutter, its components mark do not increase.

[0027] In addition, as for this invention, it is needless to say not limited to the gestalt of the above-mentioned implementation and for it to be able to change suitably. For example, a configuration as shown in drawing 5 is sufficient as a prehension migration means. The prehension migration means 30 is shown in drawing 5. The prehension migration means 30 consists of hook 31, a spring 34, an omission stop screw 32, and supporter material 33. The hook 31 which is the thread prehension section is formed in the shape of [of KO] a character. Hook 31 is supported, it is fixed by being attached in said hook drive board 22 for example, and the supporter material 33 has fitting hole 33a in which head 31a of hook 31 is inserted.

[0028] When the migration prehension means 30 of drawing 5 is applied to the gestalt of the above-mentioned implementation, hook 31 is under the threader hook 25, and it is located in said thread prehension hook 26a said appearance so that it may come in front. If the tip contacts a needle, hook 31 resists the elastic force of a spring 34, it retreats so that head 31a may meet fitting hole 33a, and if it separates from a needle, it can catch the thread which separated from return and a threader hook ahead according to the energization force of a spring 34.

[0029] Furthermore, although the threader hook was driven with the gestalt of the above-mentioned implementation with the threader shaft which rotates with actuation of a control lever, it is good also as a configuration which other devices are sufficient as, for example, contains an actuator. Moreover, although the exaggerated lock sewing machine explained in this example, the threader equipment of this invention may be applied to other sewing sewing machines of these, an encaustic sewing sewing machine, etc.

[0030]

[Effect of the Invention] According to invention according to claim 1, the thread from a spool is jutted out near the pinholing of a needle by the tension-thread-guard means, and the thread is drawn in a pinholing in the shape of a loop by threader hook. Furthermore, when the thread separates from a threader hook, it is caught by the thread prehension section of a prehension migration means, and the margin of string does not become free on the way like the threader equipment of the former [pass / by migration of a prehension migration means / through a pinholing / the margin of string], and the margin of string can be certainly drawn out from a pinholing. Therefore, a threader activity can be performed simply and certainly.

[0031] According to invention according to claim 2, a prehension migration means can be certainly caught, when the thread which the threader hook caught separates from a threader, moving with a threader hook since it is attached in the threader hook driving means so that the thread prehension section may be located under the threader hook.

[0032] If it is attached in the threader hook driving means like especially claim 2 when the thread prehension section is prepared near the threader hook, the thread prehension section may touch other members, such as a needle, in the case of the activity which draws thread in a pinholing by threader hook. However, since at least a part consists of an elastic member so that it may retreat, if the thread prehension section touches other members and it will retreat so that the field doubling prehension section which contacted the needle etc. may escape if it is the prehension migration means of claim 3, it does not have a bad influence on the activity which draws thread.

[0033] Since the thread cutting member prepared in the position can cut the thread from a spool in the regular location according to invention according to claim 4, the length to the margin of string always becomes fixed. Therefore, it can constitute from adjusting the location of the migration place of the prehension migration means after catching thread, and the location of a thread cutting member easily so that the margin of string may surely pass through a pinholing. Moreover, if the **** cutter prepared also conventionally is made to serve a double purpose also as a thread cutting member like invention according to claim 5, a thread cutting member can be prepared, without increasing components

mark.

[Translation done.]

* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the threader equipment of the sewing machine which lets thread pass to the pinholing of a needle.

[0002]

[Description of the Prior Art] Conventionally, what the threader equipment which lets a needle thread pass to the pinholing of a needle is known, for example, is indicated by the patent official report No. 2917320 is mentioned. By the detailed hook which can pass through the pinholing of a needle, the threader equipment indicated by this official report is pulling up the needle thread cut by the defined length, and performs a threader.

[0003]

[Problem(s) to be Solved by the Invention] However, with the threader equipment of the above-mentioned official report, as indicated in the 4th page right column of - of 37th line the 40th line of an official report Since "it becomes impossible for hook 37 to be unable to hold a needle thread T and it separates from a hook 35 in the rise process with the self-weight of the frictional force in **** 99 of a needle thread T, or a needle thread T etc.", It was troublesome from from [of being as requiring the activity of thread becoming free in the condition of having not drawn out the margin of string completely, and thread separating, and taking out the margin of string from a pinholing using a tool like a pincette **** / and]. [redoing a threader]

[0004] The technical problem of this invention is in the threader equipment of the sewing machine which lets a needle thread pass to the pinholing of a needle to draw out the margin of string certainly from a pinholing, and simplify a threader activity more.

[0005]

[Means for Solving the Problem] In order to solve the above technical problem, invention according to claim 1 For example, a tension-thread-guard means to detach thread and to return to the original location after moving so that thread which grasped thread (T) from a spool and was grasped may approach a pinholing (2a, 3a) of a needle (2 3) and may be jutted out as shown in drawing 1 and drawing 2 (10), In threader equipment (4) of a sewing machine (lock sewing machine 1) equipped with a threader hook (25) which moves so that thread jutted out by approaching a pinholing with a tension-thread-guard means may be caught and this thread may be drawn in a pinholing in the shape of a loop the thread prehension section (thread prehension hook 26a --) which catches the thread in a location estranged from a threader hook when thread in the condition of having been drawn in a pinholing separates from a threader hook It has hook 31 and is characterized by having a prehension migration means (an elastic member 26, prehension migration means 30) for an edge of thread caught by the thread prehension section to pass through a pinholing and to move to a location.

[0006] According to invention according to claim 1, thread from a spool is jutted out near the pinholing of a needle by tension-thread-guard means, and the thread is drawn in a pinholing in the shape of a loop by threader hook. Furthermore, when the thread separates from a threader hook, it is caught by the thread prehension section of a prehension migration means, and the margin of string does not become free on the way like threader equipment of the former [pass / by migration of a prehension migration means / through a pinholing / the margin of string], and the margin of string can be certainly drawn out from a pinholing.

[0007] It is characterized by setting invention according to claim 2 to threader equipment of a sewing machine according to claim 1, and attaching a prehension migration means so that the thread prehension section may be located under the threader hook to a threader hook driving means (20) driven so that a threader hook may be approached and estranged to a needle.

[0008] According to invention according to claim 2, a prehension migration means can be certainly caught, when thread

which a threader hook caught separates from a threader, moving with a threader hook since it is attached in a threader hook driving means so that the thread prehension section may be located under the threader hook. Here, although especially a concrete configuration of a threader hook driving means is not limited, for example, you may be the configuration of having the axis of rotation and driving a threader hook through this shaft, and may be the configuration of using an actuator and driving a threader hook.

[0009] Invention according to claim 3 is set to threader equipment of a sewing machine according to claim 1 or 2, and at least a part is characterized by consisting of an elastic member (an elastic member 26, spring 34) so that a prehension migration means may retreat, if the thread prehension section touches other members.

[0010] If it is attached in a threader hook driving means like especially claim 2 when the thread prehension section is prepared near the threader hook, the thread prehension section may touch other members, such as a needle, in the case of an activity which draws thread in a pinholing by threader hook. However, since at least a part consists of an elastic member so that it may retreat, if the thread prehension section touches other members and it will retreat so that the field doubling prehension section which contacted a needle etc. may escape if it is the prehension migration means of claim 3, it does not have a bad influence on an activity which draws thread. Here, it may be formed from a metal and resin with which the prehension migration means whole [for example,] has flexibility, saying "at least a part consists of an elastic member", and elastic members, such as a spring and rubber, may be prepared apart from the thread prehension section.

[0011] Invention according to claim 4 is characterized by preparing a thread cutting member (cutter 12) in a position in threader equipment of a sewing machine according to claim 1 to 3.

[0012] Since a thread cutting member prepared in a position can cut thread from a spool in a regular location according to invention according to claim 4, length to the margin of string always becomes fixed. Therefore, it can constitute from adjusting a location of a migration place of a prehension migration means after catching thread, and a location of a thread cutting member easily so that the margin of string may surely pass through a pinholing.

[0013] In threader equipment of a sewing machine according to claim 4, a thread cutting member may be the **** cutter fixed to the sewing-machine arm lower part like invention according to claim 5. If a **** cutter prepared also conventionally is made to serve a double purpose also as a thread cutting member for a threader like invention according to claim 5, a thread cutting member can be prepared without increasing components mark.

[0014]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to details based on a drawing. In order that the threader equipment 4 of drawing 1 may be formed in sewing-machine arm 1a of the exaggerated lock sewing machine 1 and may let a needle thread pass to the pinholings 2a and 3a of two needles 2 and 3, it is equipment. Threader equipment 4 mainly consists of a control lever 11, a cutter 12, the tension-thread-guard means 10, a needle bar thread guide 14, and a threader hook driving means 20 shown in drawing 2. The threader hook driving means 20 is usually in sewing-machine arm 1a behind the tension-thread-guard means 10, and is not in sight from an outside.

[0015] A control lever 11 is a lever operated in case it lets Thread T pass to a needle thread. A cutter 12 is a **** cutter which edge 12a is attached and cuts **** at the time of ring sewing sewing, such as *****. Moreover, the cutter 12 is formed in the position of the side lower part of sewing-machine arm 1a which is also a thread cutting member and is shown in drawing 1 which cuts a needle thread at the time of a threader. This "position" is considered so that the margin of string of the thread T which can be pulled up by thread prehension hook 26a in the case of the threader actuation mentioned later may become the length which passes through Pinholings 2a and 3a certainly, and it is decided. In addition, although the conventional **** cutter was prepared in A location of drawing 1, it is prepared in B location in this invention in consideration of the time of a threader. A needle bar thread guide 14 consists of a spiral wire by which the screw stop was carried out to the upper part of the needle fixed part 16.

[0016] The tension-thread-guard means 10 consists of the PURITENSHON section 13 and a wiper 15. The PURITENSHON section 13 is nippers about thread between attachment substrate 13a and PURITENSHON pan 13b at the time of a threader. It is formed so that the right flank of attachment substrate 13a may extend, and the wiper 15 with which the lower limit section was divided into the edge at two forks is being fixed. The amount of two crotches of a wiper 15 are guide rail 15a for guiding thread.

[0017] The threader hook driving means 20 shown in drawing 2 consists of electrode-holder 21a which fixed on the threader shaft 21 and this threader shaft 21, the hook drive board 22, hook covering 23, and 24 grades. As shown in drawing 3, among the hook coverings 23 and 24, it is prepared so that the threader hook 25 by which the tip was formed in the downward ** type may project. This threader hook 25 is the magnitude which passes and can do Pinholings 2a and 3a. The threader hook driving means 20 is driven so that this threader hook 25 may be approached

and estranged to needles 2 and 3.

[0018] Moreover, it consists of a long and slender member, and the elastic member 26 which has elasticity possible [bending] as a whole is attached in the back side of the hook drive board 22. The elastic member 26 is being fixed to the hook drive board 22 with the screw 27, the washer 28, and the nut 29. Moreover, the point of an elastic member 26 is formed needlelike toward the upper part, and has become thread prehension hook (thread prehension section) 26a which catches the thread shifted from the threader hook 25 so that it may face among the hook coverings 23 and 24. That is, an elastic member 26 serves as a prehension migration means of this invention. Moreover, as shown in drawing 4 (a), thread prehension hook 26a is just under the threader hook 25, and it is prepared so that the tip may be slightly located in front near the tip of the threader hook 25.

[0019] The tension-thread-guard means 10 and the hook driving means 20 are constituted so that each may carry out predetermined actuation with actuation of a control lever 11. That is, it is interlocked with that a control lever 11 is depressed caudad, and the PURITENSHON section 13 and a wiper 15 move until a wiper 15 passes the front of needles 2 and 3 toward the bottom in a slight right slanting. While the threader shaft 21 descends to coincidence mostly, it rotates in the direction in which the tip of the hook drive board 22 goes ahead, and the threader hook 25 passes along the pinholing of a needle 2 or a needle 3. Next, if a control lever 11 is detached, while a control lever 11 goes up and returning to the original location, the PURITENSHON section 13 and a wiper 15 move to the left slanting upper part, and the threader shaft 21 goes up rotating to hard flow, and they will be in the original condition. Although usually closed between attachment substrate 13a of the PURITENSHON section 13, and PURITENSHON pan 13b, when going up, it opens, after the threader hook 25 catches thread certainly. In addition, since such a device of threader equipment 10 of operation is well-known technology already, details are omitted.

[0020] It can choose now as threader equipment 10 to any of needles 2 and 3 a threader is carried out by preparing the needle change over lever which is not illustrated and operating this lever.

[0021] The actuation at the time of the threader activity in the threader equipment 10 of the above-mentioned configuration is explained. the thread T first guided with threader equipment 10 from the spool which does not have the sewing-machine arm 1a upper part a drawing example when letting a needle thread pass to a needle 2 -- a needle bar thread guide 14 -- through -- if it hangs, the outside of through and a control lever 11 is turned subsequently to guide rail 15a of a wiper 15 between attachment substrate 13a of the PURITENSHON section 13, and PURITENSHON pan 13b and thread is hung on a cutter 12, thread will snap in the location. At this time, the threader hook 25 and thread prehension hook 26a are in the condition of drawing 4 (a).

[0022] In this condition, if a control lever 11 is lengthened below (the direction of arrow head C of drawing 1), the PURITENSHON section 13 will move toward the bottom as mentioned above in the slight right slanting in drawing 1 . It moves so that Thread T may be guided [both] to a wiper 15. If it stops in the place where the wiper 15 passed the needles 2 and 3 front, by between attachment substrate 13a of the PURITENSHON section 13 and PURITENSHON pan 13b being closed, it is inserted by sufficient force and Thread T will ***** with predetermined tension just before the pinholing of a needle 2.

[0023] It rotates, while the threader shaft 21 descends to coincidence mostly with the above-mentioned PURITENSHON section 13 and actuation of a wiper 15, and the threader hook 25 approaches pinholing 2a of a needle 2. When Thread T changes into the condition of having *****ed before pinholing 2a, by further rotation of the threader shaft 21, the threader hook 25 passes through pinholing 2a, and draws Thread T in pinholing 2a in the shape of a jig loop by the ** type tip. It seems that it bends back and a needle 2 is not affected as shown in drawing 4 (b) since it has flexibility although the tip of thread prehension hook 26a contacts the lower limit section of a needle 2 at this time.

[0024] If the hand of a control lever 11 is lifted in this condition, the control lever 11 goes up so that it may return. The threader shaft 21 goes up rotating to hard flow, and in connection with this motion, as shown in drawing 4 (c), the threader hook 25 pulls up Thread T. At this time, since thread prehension hook 26a also separates from the needle 2, it returns to the original configuration. Moreover, mostly, it is wide opened by coincidence between attachment substrate 13a and PURITENSHON pan 13b, and the PURITENSHON section 13 and a wiper 15 detach Thread T, move to the diagonal left, and return to the original location. Although Thread T will separate from the threader hook 25 with a self-weight etc. in the process in which the threader hook 25 goes up, thread prehension hook 26a located under the slant of the threader hook 25 is started, and it is caught. If it goes up while the threader shaft 21 furthermore rotates, and return and thread prehension hook 26a also return to the original position in readiness in the original location, the margin of string of Thread T currently cut by predetermined length will pass through pinholing 2a (drawing 4 (d)). In addition, since thread prehension hook 26a is not fixed only by having hooked Thread T, sewing can be started without the activity removed from thread prehension hook 26a.

[0025] According to the threader equipment 10 of a more than, the thread which separated from the threader hook 25

when drawing out Thread T from a pinholing is caught by thread prehension hook 26a, and the margin of string is in the middle of drawing, and since the margin of string passes from a pinholing with the actuation in which thread prehension hook 26a returns to the original location, it can be certainly drawn out from a pinholing so that it may not become free. Therefore, a threader activity is easy and can be done certainly. Moreover, it is attached in the hook drive board 22 which constitutes the threader hook driving means 20, and thread prehension hook 26a is under the threader hook 25, and since the elastic member 26 which has thread prehension hook 26a is located ahead, it can catch certainly the thread T which separated from the threader hook 25, moving with the threader hook 25. Thread prehension hook 26a retreats bending, and seems furthermore, for thread prehension hook 26a to be just under the threader hook 25, and to contact a needle 2, when the threader hook 25 draws out thread since the tip is prepared so that it may be slightly located in front near the tip of the threader hook 25, but not to affect a needle 2, since it is a part of elastic member 26.

[0026] Moreover, since the thread T pulled out from the spool by the cutter 12 prepared in the position under a sewing-machine arm 1a flank can be cut in the regular location, if thread prehension hook 26a returns to a position in readiness, the margin of string will surely be drawn out from a pinholing. Furthermore, since the cutter 12 serves also as the conventional **** cutter, its components mark do not increase.

[0027] In addition, as for this invention, it is needless to say not limited to the gestalt of the above-mentioned implementation and for it to be able to change suitably. For example, a configuration as shown in drawing 5 is sufficient as a prehension migration means. The prehension migration means 30 is shown in drawing 5. The prehension migration means 30 consists of hook 31, a spring 34, an omission stop screw 32, and supporter material 33. The hook 31 which is the thread prehension section is formed in the shape of [of KO] a character. Hook 31 is supported, it is fixed by being attached in said hook drive board 22 for example, and the supporter material 33 has fitting hole 33a in which head 31a of hook 31 is inserted.

[0028] When the migration prehension means 30 of drawing 5 is applied to the gestalt of the above-mentioned implementation, hook 31 is under the threader hook 25, and it is located in said thread prehension hook 26a said appearance so that it may come in front. If the tip contacts a needle, hook 31 resists the elastic force of a spring 34, it retreats so that head 31a may meet fitting hole 33a, and if it separates from a needle, it can catch the thread which separated from return and a threader hook ahead according to the energization force of a spring 34.

[0029] Furthermore, although the threader hook was driven with the gestalt of the above-mentioned implementation with the threader shaft which rotates with actuation of a control lever, it is good also as a configuration which other devices are sufficient as, for example, contains an actuator. Moreover, although the exaggerated lock sewing machine explained in this example, the threader equipment of this invention may be applied to other sewing sewing machines of these, an encaustic sewing sewing machine, etc.

[0030]

[Effect of the Invention] According to invention according to claim 1, the thread from a spool is jutted out near the pinholing of a needle by the tension-thread-guard means, and the thread is drawn in a pinholing in the shape of a loop by threader hook. Furthermore, when the thread separates from a threader hook, it is caught by the thread prehension section of a prehension migration means, and the margin of string does not become free on the way like the threader equipment of the former [pass / by migration of a prehension migration means / through a pinholing / the margin of string], and the margin of string can be certainly drawn out from a pinholing. Therefore, a threader activity can be performed simply and certainly.

[0031] According to invention according to claim 2, a prehension migration means can be certainly caught, when the thread which the threader hook caught separates from a threader, moving with a threader hook since it is attached in the threader hook driving means so that the thread prehension section may be located under the threader hook.

[0032] If it is attached in the threader hook driving means like especially claim 2 when the thread prehension section is prepared near the threader hook, the thread prehension section may touch other members, such as a needle, in the case of the activity which draws thread in a pinholing by threader hook. However, since at least a part consists of an elastic member so that it may retreat, if the thread prehension section touches other members and it will retreat so that the field doubling prehension section which contacted the needle etc. may escape if it is the prehension migration means of claim 3, it does not have a bad influence on the activity which draws thread.

[0033] Since the thread cutting member prepared in the position can cut the thread from a spool in the regular location according to invention according to claim 4, the length to the margin of string always becomes fixed. Therefore, it can constitute from adjusting the location of the migration place of the prehension migration means after catching thread, and the location of a thread cutting member easily so that the margin of string may surely pass through a pinholing. Moreover, if the **** cutter prepared also conventionally is made to serve a double purpose also as a thread cutting member like invention according to claim 5, a thread cutting member can be prepared, without increasing components

mark.

[Translation done.]